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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,144	07/10/2003	Satoshi Ito	47539.24	4445

7590 03/30/2005

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EXAMINER

KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/618,144	ITO ET AL.	
	Examiner	Art Unit	
	C. Melissa Koslow	1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 21-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/10/03</u> . | 6) <input type="checkbox"/> Other: ____. |

Applicant's election without traverse of group I, claims 1-20, 24 and 25 in the paper dated 18 February 2005 is acknowledged.

Claims 21-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

The Japanese references cited in the information disclosure statement of 10 July 2003 have been considered with respect to the provided English abstracts.

The drawings are objected to because figures 1 and 6-10 are too dark. The individual particles cannot be distinguished in the figures. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 65a and 65b are not

Art Unit: 1755

on figure 3 as implied by the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "50" and "60" have both been used to designate the substrate in figure 4. The specification teaches these are two different substrates and figure 4 only shows one substrate. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The disclosure is objected to because of the following informalities: The description of the figures on pages 62 and 63 imply reference numbers 5, 71R, 71G and 71B are part of figure 4. These numbers are in figure 3. Appropriate correction is required.

Art Unit: 1755

Claims 1, 2, 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The compositional description of the silicate phosphors in claims 1, 2, 17 and in the first step of claim 18 would not be a silicate. The claims teach a metallic element dispersed and mixed in a silicon system material. This is the description of a two component mixture, not of a silicate phosphor. A silicate is a compound where the metal, silicon and oxygen atoms are intimately mixed to form an atomic crystal structure.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 7-9, 11-17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent 3,541,019.

This reference teaches producing manganese doped zinc silicate phosphor particles. The process is to mixing silica hydrogel, which is a suspension of colloidal silica in water and an aqueous solution of zinc and manganese salts; adding ammonium hydroxide, which is an alkali hydroxide, to the mixture to precipitate zinc and manganese hydroxides on the surface of the silica hydrogel and calcining the resulting particles at about 1900-2100°F (about 1037-1148°C). The reference teaches the claimed process and particles.

Art Unit: 1755

Claims 7-11, 14-16, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,576,156.

This reference teaches producing silicate phosphors comprising mixing a slurry of metal doped metal oxides with a slurry of colloidal silica and calcining or firing the mixture. The silica is preferably an Aerosil silica, which have a specific surface area in the range of 150-350 m²/g. The solvents used in the slurries are selected from water and/or an alcohol. If the desired silicate is a manganese doped zinc silicate, then the calcining temperature is 1100°C. The other possible taught metal combinations are europium and one of barium, barium and strontium and strontium and calcium; yttrium and terbium and yttrium and cerium (see the tables in column 4). The reference teaches the claimed process and particles.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 20, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/71636.

This reference teaches zinc silicate phosphors particles. The taught particles are spherical, uniform particles having a particle size of less than 1 micron (col. 5, lines 16-17 and fig. 1), which means shape of the particles is equal and the coefficient of variation of particle size distribution is essentially non-existent. The reference teaches the activator is homogeneously distributed throughout the particles and all the particles have the formula Zn₂SiO₄. Thus the all the particles have a uniform compositional distribution and a coefficient of variation of inter-

Art Unit: 1755

particle distribution of content of the elements is essentially non-existent. The reference suggests the claimed particles, since the size range of less than 1 micron overlaps the claimed range.

Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). While the taught particles are produced by a different process than that of claim 9, claims 20, 24 and 25 are product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 1, 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,985,176; 6,039,894 or 6,180,029.

All three of these references teach spherical silicate phosphors. The mean particle size range in U.S. patent 5,985,176 is 0.1-3 microns, which overlaps the claimed range. The mean particle size range in U.S. patent 6,039,895 can be 0.1-1 micron, which falls within the claimed range. The mean particle size range in U.S. patent 6,180,029 is 0.3-5 microns, which overlaps the claimed range (claim 1). Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). While the taught particles are produced by a different

Art Unit: 1755

process than that of claim 9, claims 20 and 24 are product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 7-9, 11, 14-16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,518,655.

This reference teaches producing a manganese doped zinc silicate phosphor by mixing in an aqueous medium zinc oxide, silica gel (which is colloidal silica) and manganese carbonate and calcining the mixture 1150-1300°C. The reference does not teach the claimed method of producing the precursor mixture. In fact, it does not teach the order of mixing the component to produce the taught aqueous slurry of silica gel, zinc oxide and manganese carbonate. One of ordinary skill in the art would have found it obvious to mix an aqueous slurry of the individual component since the order of mixing is not critical. *In re Gibson*, 39 F.2d 975, 5USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is *prima facie* obvious.). The reference suggests the claimed method and particles.

Claims 7-11, 14-16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,611,961.

This reference teaches producing a manganese doped zinc silicate phosphor by admixing a colloidal silica dispersed in water, such as Ludox AM, which has a surface area of 230 m²/g, with a zinc precursor and manganese precursor to form an aqueous dispersion and calcining the

Art Unit: 1755

mixture 1050-1300°C. The reference does not teach the claimed order of producing the claimed precursor mixture. One of ordinary skill in the art would have found it obvious to mix an aqueous slurry of the individual component since the order of mixing is not critical. *In re Gibson*, 39 F.2d 975, 5USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is *prima facie* obvious.). The reference suggests the claimed method and particles.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
March 25, 2005


C. Melissa Koslow
Primary Examiner
Tech. Center 1700